

Chemistry Unit

Procedures for Verification of Reagents

1 Purpose

A reagent is a substance used because of its known chemical or biological activity. These procedures describe the verification and labeling of reagents when used for casework in the Chemistry Unit (CU).

2 Scope

This document applies to CU personnel that use reagents for casework.

3 Equipment/Materials/Reagents

The appropriate equipment and materials used to verify a reagent will depend upon the nature of the substance. In most instances the verifications will be performed following an established CU standard operating procedure (SOP), and the equipment, materials, and reagents required will be listed within the applicable SOP(s).

4 Procedures

4.1 Procedures for Verification of Reagent Reliability

The reliability of a reagent will be verified prior to, or in concurrence with casework. This may be done in any of the following ways:

- When available, follow the reagent verification instructions given in the SOP for the particular analysis in which the reagent is used.
- Perform the analysis using suitable standards, controls, blanks and/or performance checks and evaluate the outcome.
- Measurement of a chemical property (e.g., pH).
- Apply to an item and evaluate a physical property (e.g., contrast of microstructural phases).

Any applicable reagent verification data acquired will be kept in an appropriate location, such as within a reagent logbook, an instrumentation binder, data archive, and/or case notes.

4.2 Labeling of Reagent Containers

4.2.1 CU Prepared Reagents

Reagents prepared in the CU will be recorded using the *CU Reagent Preparation Log* (Appendix A) or within the CU Chemical Products database. Additionally, the following will be recorded on the reagent container:

- Reagent name (using common name or SDS name)
- Lot number¹
- Expiration date, if applicable

4.2.2 Purchased Reagents

It is good laboratory practice to record the date received, date opened, and opener's initials on the reagent container, however this is not a requirement.

4.3 Reagent Preparation Records

For each CU prepared, stored reagent, the following information will be recorded in a reagent log book maintained by each group (see Appendix A) or within the CU Chemical Products database:

- Date of preparation
- Preparer
- Lot number
- Components used to make the reagent and their source and lot information
- Verification result(s)
- Expiration date, if applicable

4.4 Use of Reagents Beyond Their Listed Expiration Date

Reagents may be used past their expiration dates provided that appropriate steps are taken with every use to demonstrate reliability (see section 4.1). The expiration date will not be altered or removed.

¹ Lot numbers for reagents prepared in-house will contain the initials of the person preparing the reagent and the date of preparation. If multiple reagents are made on the same day by the same person, a letter will be added to the end of the lot number to ensure a unique link to the appropriate reagent.

4.5 Recording of Reagent Lot Number

The lot number and/or CU Chemical Products database number of any reagent(s) used to examine evidence will be recorded in the case notes.

5 Safety

Take standard precautions for the handling of all chemicals. Refer to appropriate Safety Data Sheets (SDS) for safe handling practices. Refer to the *FBI Laboratory Safety Manual* for guidance.

6 References

FBI Laboratory Safety Manual

Rev. #	Issue Date	History
6	09/13/19	Removed “mixed solvents” and “buffers” from section 1. Changed “subunit” to “group” in section 4.3. Simplified footnote. Removed five references from section 6 (outdated and not needed).
7	07/15/20	Minor edits made to sections 1, 4.2.1, and 4.3 for clarity. Revised scope to include Fire Debris. Added “performance checks” to section 4.1. Minor edit to section 4.2.1 title. Added “CU Chemical Products database” to section 4.2.1 and made minor edits for clarity. Added “CU Chemical Products database” to section 4.3, made minor edits for clarity, and simplified verification information to record. Added “CU Chemical Products database number” to section 4.5.

Approval

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Fire Debris Technical
Leader:

Date: 07/14/2020

General Chemistry
Technical Leader:

Date: 07/14/2020

Metallurgy
Technical Leader:

Date: 07/14/2020

Paints and Polymers
Technical Leader:

Date: 07/14/2020

Toxicology
Technical Leader:

Date: 07/14/2020

Chemistry Unit Chief:

Date: 07/14/2020

QA Approval

Quality Manager:

Date: 07/14/2020

Appendix A: Reagent Preparation Log

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